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tower is just above the surface. The side propellers being then set in motion, the vessel can be sunk to any required depth, there being an automatic arrangement by which the engines are stopped directly that depth is exceeded. An automatic horizontal steering gear also prevents the boat from going down or up headforemost, an even keel being preserved throughout all the manœuvres. Should a breakdown of the engine occur, the boat from its own buoyancy at once rises to the surface. The motive power is steam, and as long as the vessel is above water the fires can be stoked, the smoke being driven through two channels, which pass partly round the hull and point aft. When, however, the boat sinks, the fires have to be sealed, and reserve steam is used, which is kept at high pressure in two tanks. With this the boat has been driven for five hours at a speed of three miles an hour. Her speed on the surface is eight knots. The crew numbers three, and during their submarine existence, they have to subsist on the amount of air which they take with them in the hull, in which four men have subsisted for six hours without any especial inconvenience. The boat is sixty-four feet long, and the central diameter is nine feet. The enormous utility of such a vessel as this in naval warfare is at once apparent. Moving without the slightest apparent sign of existence, she can launch torpedoes against hostile vessels, enter a harbor unperceived, and render useless the most complicated system of submarine mines. The trial at Landskrona was witnessed by officers representing every European power.

#### FOURTH CONGRESS OF GERMAN PHYSICIANS, 1885.

THE fact that some of the most important work in medical science is being done in Germany, and that at the congress, whose proceedings have been recently published,<sup>1</sup> some valuable additions to medical knowledge were made, warrants a notice in the columns of *Science*.

The first subject discussed by the congress was corpulence. Ebstein advanced the opinion that drugs were of little service in reducing the amount of fat, and that an entire change in the regimen—including both change of diet and of the manner of living—was necessary. Any method which reduced the general nutrition, and thus removed fat, was a failure: the fat alone must be removed. The method must not require the individual to give up his business during treatment, else it would not be generally applicable. The method

must be capable of being continued indefinitely without producing unpleasant results, for individuals predisposed to corpulence by heredity or constitution must keep up the diet for a long time. One method is to cut off all fatty foods. But as carbohydrates may be changed into fat in the body, this is not reasonable. The object is rather to prevent the formation of fat in the body. To secure this, it is necessary to regulate the proportion of albuminous, starchy, and fatty foods, so that perfect nutrition shall be secured, but no excess of fat produced. The necessary amount of fat for a healthy man is 142 gr. per diem. If this is reduced one-half, a part of the amount necessary for nutrition will be taken from the body to compensate for the reduced allowance in the food, and thus the excess of fat may be removed. Under this system the individual does not suffer the distress which is felt by those who are cut off from all fatty food, and the results are more successful and agreeable than those secured by the Banting system. The amount of carbohydrates is to be reduced so that no surplus above bodily needs shall be taken. In the Banting system the diet is chiefly nitrogenous, which often causes indigestion. Ebstein gives nitrogenous food, with the reduced allowance of starch and fat in sufficient quantity to keep up the general nutrition and working strength, but not in such amounts as to overload and embarrass the organs which digest proteids. The necessity of muscular exercise of sufficient force to produce free perspiration is insisted upon. This system has met with approval in Germany on account of its success.

Henneberg, in discussing the subject, approached it from a different side, and, by a review of the methods adopted in fattening cattle, sought to deduce the rules necessary to be observed in avoiding the accumulation of fat in man. The general discussion elicited varying views upon the physiology of digestion, but all agreed that the use of medicine for reducing corpulence was to be avoided.

The discovery and demonstration by Lustgarten of a bacillus of syphilis has already been alluded to in *Science*.

Measures to be adopted in combating fever formed the topic of one day's discussion of the congress. The well known property of quinine in reducing fever has led to a search for similar properties in organic substances allied to it in chemical constituents. Benzol, carbolic and salicylic acids, salicin, resorcin, hydrochinon, chinolin, kairin, thallin and antipyrin are such substances, and they have all been found of use as antipyretics. Many of them have, however, unpleasant effects; so that, at present, salicin, kairin, and

<sup>1</sup> *Verhandlungen des congresses für innere medicin. Vierter congress, 1885.* Herausgegeben von Drs. E. Leyden und E. Pfeiffer.

antipyrin are the only ones in general use. Antipyretics may act either by reducing the production of heat, *i. e.*, the oxidation process; or by increasing the amount of heat given out from the body; or by paralysing certain micro-organisms whose action irritates the heat producing mechanism; or by restraining and regulating the action of these heat producing nervous mechanisms directly. It is to the latter theory that Filehne and Liebermeister assent. The latter, to whom is due the use of cold baths in the treatment of fever, admitted that antipyrin was applicable in some cases where the application of cold was inadvisable. But cold baths are not to be given up. A healthy man in a cold bath (68° F.) gives off in ten minutes seven times as much heat as under ordinary circumstances. But his body temperature remains the same. Therefore the effect of the bath is to increase seven times the production of heat in the body. If the bath is long continued the temperature falls slightly. After the bath the temperature falls slightly. The same is true in fever with this difference, that the fall of temperature follows a cold bath more quickly, and to a much greater degree than in health. In many cases this removal of heat by bath is indispensable, even though it is accompanied by an increase in the production of heat, for in fever experience shows that the amount abstracted exceeds the amount produced. According to v. Jaksch, thallin in 0.25 dose produces a fall of temperature more quickly than antipyrin in 1. dose. It is apt, however, to produce a chill and sweat, and its effect is not so lasting as that of antipyrin. Neither of them affects the duration of a specific fever (such as pneumonia or erysipelas), or relieve the distress of the patient. In pneumonia and erysipelas their use prolongs the period of convalescence by reducing the recuperative powers of the patient. They are, therefore, to be used only in cases of fever in which the temperature rises to a dangerous point, or in which cold bathing cannot be used. To this opinion Strümpell of Leipzig agreed. Others maintained that the reduction of temperature gave the patient much comfort, relieving many distressing symptoms. All agreed that the use of cold baths, or cold sponging, was preferable to the use of drugs.

Asthma was the subject of a long and exhaustive discussion, which elicited a number of subdivisions of the affection of some therapeutic importance. Asthma is regarded as a nervous affection, attended by a sudden obstruction to expiration, with dilatation of the lung. It may be a primary disease due to changes in the nervous centres governing respiration. In the majority of cases, however, it is a secondary disease of reflex

origin. An irritation arising at some point sets up an excitement of the nervous mechanism of respiration, which shows itself by the attack. Such an irritation may come from the mucous membrane of the nose when that is thickened by chronic catarrh, or covered with polypi, or irritated by some external material, as in hay fever, in which case operative measures on the nasal cavity, or anæsthetics applied to it, will cure the asthmatic attacks. Or the irritation may come from the finer bronchi, and the inflammation of these may set up a spasm, and thus cause the attack, in which case the treatment must be directed toward the bronchitis. The exact character of the spasm attending the attack is undetermined. Some regard it as a spasm of the diaphragm, which prevents this muscle from relaxing, as it normally does, in expiration. This view is based upon the fact that electrical excitement of the nerves to the diaphragm will produce results similar to those occurring in asthma, while excitement of the nerves to the bronchial muscles does not produce asthma. The majority of authorities, however, consider this theory questionable, and hold that a true spasm of the muscular coat of the finer bronchi causes the attack. All admit that the spasm, from whatever cause, is best combated by narcotics, of which morphine and chloral are the most reliable. But treatment of the attack should always be followed by treatment of the cause, especially if that is easily reached, as in cases of nasal catarrh.

Acute articular rheumatism has lately been regarded as an acute infectious disease like pneumonia and typhoid fever. The opinion was advanced by Edlefsen that it developed in certain localities in Kiel more frequently than in others, and he found, in investigating 845 cases, that persons living in certain houses were especially liable to the disease. He concluded that the micro-organism causing the disease is one which clings to dwellings, especially such as are built on damp ground, and advises persons who are subject to frequent attacks to change their residence. Such authorities as Jurgensen and Friedländer agreed to this view, and in support of it cited the fact that in certain barracks and hospitals, cases of acute rheumatism developed in great numbers. All admitted that the mortality had diminished greatly since the use of salicylate of soda was introduced.

A number of shorter papers of value were read, which are not of such general interest as to demand notice. The proceedings of this congress should be followed by all physicians interested in the progress of scientific medicine.

M. A. S.